DOCUMENT RESUME

ED 280 375 HE 020 192

TITLE	Development of a Classification System for Postsecondary Courses (CSPEC). Contractor Report.
INSTITUTION	Applied Systems Inst., Inc., Washington, DC.
SPONS AGENCY	Center for Education Statistics (OERI/ED), Washington, DC.
REPORT NO	CS-87-312c
PUB DATE	Feb 87
CONTRACT	300-84-0261
NOTE	91p.; Final report.
PUB TYPE	Reference Materials - Directories/Catalogs (132) -- Reports - Descriptive (141)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Church Related Colleges; *Classification; *Courses; *Databases; *Postsecondary Education; Private Colleges; Public Colleges; *Undergraduate Study
IDENTIFIERS	*Classification of Instructional Programs

ABSTRACT

The objectives, activities, and results of a project to classify higher education undergraduate courses are summarized. The Classification System for Postsecondary Courses (CSPEC) is based on the structure of the Center for Education Statistics' Classification of Instructional Programs (CIP) but provides a greater level of detail for course titles. By expanding the CIP six-digit code to eight digits, CSPEC allows for the assignment of a unique code for each course under an area of instruction. Catalogs from 60 public and private colleges were used to develop the CSPEC database. In order to determine the reliability and ease of use of CSPEC for survey purposes, a small coding experiment was conducted. Procedures to code a course, using CSPEC, are set forth. For 50 CIP sections, information is provided on results of testing of the CSPEC coding system, with attention to distinctions between similar courses. The 60 colleges are listed, along with information on control, level, and region. Members of the course classification advisory panel are also identified. (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED280375

Contractor Report

Development of a Classification System for Postsecondary Courses (CSPEC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

OERI
Office of Educational Research and Improvement
U.S. Department of Education
Center for Education Statistics

HE020 192

BEST COPY AVAILABLE

Development of a Classification System for Postsecondary Courses (CSPEC)

Applied Systems Institute, Inc.

C. Dennis Carroll
Project Officer
Center for Education Statistics

Prepared for the Center for Education Statistics under contract OE-300-84-0261 with the U.S. Department of Education. Contractors undertaking such projects are encouraged to express freely their professional judgment. This report, therefore, does not necessarily represent positions or policies of the Government, and no official endorsement should be inferred. This report is released as received from the contractor.

February 1987

CS 87-312c

TABLE OF CONTENTS

Section	Description	Page
1.0	INTRODUCTION	1
2.0	METHODOLOGY	1
2.1	Identification of a Sample of School Catalogs	2
2.2	Establishment of an Advisory Panel	6
2.3	Development of an Eight-Digit Coding Scheme	8
2.4	Try-Out of the Coding System on a Sample of Transcripts	10
3.0	ADVISORY PANEL EVALUATION	10
4.0	TESTING THE CSPEC	74
4.1	Test Objective	74
4.2	Identification of a Sample of School Transcripts	75
4.3	Training and Pre-Testing	77
4.4	Test Environment	77
4.5	Summary of Findings	77
4.6	Factors Impacting on Coding Decisions Utilizing the CSPEC	79
5.0	Summary and Recommendations	83
	APPENDIX	

ACKNOWLEDGEMENTS

The CSPEC represents the time, effort and interested support of a joint CES and ASI team, whom ASI wishes to acknowledge with appreciation. Dr. George Brown and Dr. Dennis Carroll of the Center for Education Statistics gave their full support, advice and cooperation throughout the project. On the ASI side, Dr. Paula Knepper provided important technical guidance, particularly in the areas of programming and testing; Ms. Jo Ann Bertschmann carried out the day-to-day management functions of the project, including the supervision of support staff, the production of the final deliverables, and the writing of the final technical report. Both Dr. Knepper and Ms. Bertschmann were given valuable assistance from their staff, in particular Ms. Joan McGowan and Mr. Jae Yoon for the programming tasks; and Ms. Laura Diuguid, Ms. Janice Kohn and Mr. Calvin Timmerman for the coding, testing and research tasks. Finally, we wish to recognize the panelists from the Washington area (listed in Section 2.2) who provided their expertise to the project to ensure the CSPEC represented a quality research tool.

1.0 INTRODUCTION

This final report summarizes the objectives, activities and results of the project entitled "Development of a Classification System for Postsecondary Courses", carried out by Applied Systems Institute, Inc. (ASI) under Contract No. 300-84-0261 for the Center for Education Statistics (CES) of the U.S. Department of Education. In addition to this report, the final deliverables of the project include a computer tape and hard copy printout of the final course classification.

This project is an outgrowth of the ongoing efforts of CES to develop more comprehensive survey tools to gather and report on increasingly complex and diverse postsecondary education experiences in the United States. As specifically required by CES in its Request for Proposals, the Classification System for Postsecondary Education Courses (CSPEC) developed by ASI builds upon Classification of Instructional Programs (CIP) published by the Center for Education Statistics in 1981. CIP's six-digit coding system classifies essentially all levels and types of instructional programs. It is not designed, however, to identify the individual courses which make up any one instructional program.

The specific impetus to extend the CIP stems from the current research needs of two major CES-sponsored projects which are following the progress of respondents who participated in the National Longitudinal Study of the High School Class of 1972 (NLS-72), and in High School and Beyond (HS&B) in 1980. Postsecondary undergraduate transcripts of these participants have been collected for analysis, as have the catalogs of the schools they have attended. In order to maximize the capability of CES analysts to interpret and compare transcript data, standard identifications for courses of similar content are required.

Hence, the primary objective of this project was to adapt CIP for course identification by expanding its six-digit code to eight digits, using the additional two digits to identify a unique postsecondary undergraduate course. Also, in anticipation of the use of the ASI-developed Classification System for Postsecondary Education Courses in follow-up studies for NLS-72 and HS&B, the field of courses on which the expanded coding system was based were those comprising the curricula of a sample of postsecondary institutions in which the participants of these studies had been enrolled. The original sample of 120 institutions was reduced within the first few months of the contract to 60 due to time and budgetary constraints. The validity of the sample was nevertheless retained insofar as representation by location, level (two-year or four-year) and control (whether public, independent, proprietary or religious) of the schools.

2.0 METHODOLOGY

In order to develop CSPEC, it was necessary to identify the majority of undergraduate courses offered at the postsecondary level from a sample of college catalogs and determine which instructional program within CIP each belonged to. Once this determination was made, each course was assigned a unique eight-digit code.

A series of tasks was performed to create the desired classification. These are described in the following sections.

2.1 Identification of a Sample of School Catalogs

The overall objective of the project was to classify higher education undergraduate courses into categories consistent with CIP and further break that classification system into one with a greater level of detail for course titles. Most institutions publish a description of courses offered to their students. Hence, to identify the majority of types of courses offered, ASI analyzed a sample of catalogs. A sample of 120 institutions was originally selected and their current course catalogs obtained. As previously indicated, however, given time and budgetary restraints, a subsample of 60 institutions was finally utilized for the development of the Postsecondary Course Classification.

The aim of ASI's sampling scheme was to provide a selection of schools offering the greatest variety of courses. That selection was made from the Education Directory of Colleges and Universities 1981-82 (Ed Directory) and the 1982 Directory of Schools Offering Occupational Programs (DSOOP), both published by the Center for Education Statistics. These represented the most current publications with information about program offerings in post-secondary institutions at the commencement of this project. (A more recent Ed Directory was available at the time, but program offerings would have had to have been determined from the corresponding Earned Degrees and Other Formal Awards Conferred (EDC) file, the most recent of which is 1981-82.) From these Directories, ASI identified those institutions attended by students in the NLS and HS&B studies, which formed the basis of the sample.

We note that our sample was not statistically representative of the population of institutions nor of the courses offered because our interest was not in the number of courses offered or the frequency of course availability, but rather to determine the variety available to students in the NLS and HS&B studies, regardless of popularity. ASI utilized a multi-matrix type design for sample selection in order to assure that institutions were appropriately represented on the dimensions of control (public, private independent, private religious, and proprietary), level (four-year and two-year), and geographic region. That is, the sample was selected in such a way as to be representative of institutions on any one dimension, but not on all dimensions at once.

This type of methodology has been suggested by William G. Cochran (Sampling Techniques, John Wiley & Sons: New York, 1977) and others as a method for increasing the assurance or adequacy of representation on any one characteristic of interest when sample size is not adequate to support a completely crossed design. While a statistically representative sample was not a criterion for this sample, a scheme such as the one used helped to assure representation for all sectors and on other limited dimensions of interest.

The final list of schools included in the sample of catalogs selected and the cells to which they belong are presented below. (Control and level categories were constructed from HEGIS data and the region categories were the Census divisions collapsed to the form categories shown.)

ID	NAME	CONTROL	LEVEL	REGION
209013	Griffin-Spalding Co. Vo-Tec Sch.	Public	Voc.	South
7468	School of Visual Arts	Proprietary	4-Yr	Northeast
10195	Art Institute of Ft. Lauderdale	Proprietary	2-Yr	South
1625	Ricks College	Religious	2-Yr	West
2605	Fairleigh Dickenson-Edw. Wms.	Independent	2-Yr	Northeast
2296	Muskegon Business College	Independent	2-Yr	Midwest
2171	Mass. Bay Cmty. College	Public	2-Yr	Northeast
10051	CUNY La Guardia	Public	2-Yr	Northeast
2879	Sullivan Co. Cmty. College	Public	2-Yr	Northeast
2864	Dutchess Cmty. College	Public	2-Yr	Northeast
5753	Michael J. Owens Tech. College	Public	2-Yr	Midwest
1773	Triton College	Public	2-Yr	Midwest
2339	Brainerd Cmty. College	Public	2-Yr	Midwest
2370	N. Hennepin Cmty. College	Public	2-Yr	Midwest
1543	Albany Jr. College	Public	2-Yr	South
3727	Northern Va. Cmty. College	Public	2-Yr	South

ID	NAME	CONTROL	LEVEL	REGION
3999	Cleveland State Cmty. College	Public	2-Yr	South
5449	Cen. Carolina Tech. College	Public	2-Yr	South
3643	Texas Southmost College	Public	2-Yr	South
3593	Navarro College	Public	2-Yr	South
3772	Centralia College	Public	2-Yr	West
1222	East Los Angeles College	Public	2-Yr	West
3368	Saint Vincent College	Religious	4-Yr	Northeast
2823	St. John's University	Religious	4-Yr	Northeast
3035	Ohio Dominican College	Religious	4-Yr	West
3839	Cathage College	Religious	4-Yr	West
2383	St. Paul Bible College	Religious	4-Yr	West
3491	Free Will Baptist College	Religious	4-Yr	South
2433	Rust College	Religious	4-Yr	South
3457	Wofford College	Religious	4-Yr	South
3623	St. Mary's Univ. of San Antonio	Religious	4-Yr	South
1379	Connecticut Coll.	Independent	4-Yr	Northeast
1456	Southeastern Univ.	Independent	4-Yr	Northeast
4804	New York Insti. of Technology	Independent	4-Yr	Northeast
3282	King's College	Independent	4-Yr	Northeast
1444	George Washington University	Independent	4-Yr	Northeast

ID	NAME	CONTROL	LEVEL	REGION
1727	Moody Bible Institute	Independent	4-Yr	Midwest
2279	Lawrence Inst. of Technology	Independent	4-Yr	Midwest
1252	Pacific Christian	Independent	4-Yr	West
2866	Fashion Institute of Technology	Public	4-Yr	Northeast
2847	SUNY College at Oneanta	Public	4-Yr	Northeast
2013	Univ. of Maryland College Park	Public	4-Yr	Northeast
9092	Univ. of Michigan Ann Arbor	Public	4-Yr	Midwest
3459	Black Hills State College	Public	4-Yr	Midwest
1585	North Georgia College	Public	4-Yr	South
1005	Alabama State University	Public	4-Yr	South
3487	East Tenn. State University	Public	4-Yr	South
1999	University of Louisville	Public	4-Yr	South
10366	Oklahoma State University, Main	Public	4-Yr	South
3932	University of Wyoming	Public	4-Yr	West
1314	Univ. of Calif. Irvine	Public	4-Yr	West

We note that our sample contained only one Voc-Tec school. Our investigations indicated that courses offered at such institutions were the same as those offered in any two-year vocational school. Nevertheless, we did acquire and review additional Voc-Tec catalogs in order to be certain those types of courses were well covered.

2.2 Establishment of an Advisory Panel

In order to place specific courses accurately in the proper CIP curriculum group and resolve problems of dual placement and duplicate course content, an advisory panel was formed of persons expert in a broad range of postsecondary areas to assist ASI personnel in the development of CSPEC and to review the final product prior to submission to the Center for Education Statistics.

Due to budgetary constraints, ASI limited its panel selection to persons based within commuting distance of Washington, D.C. area and knowledgeable in those postsecondary fields in which ASI could not provide its own inhouse expertise. Selection was further based on recommendations from national associations responsible for accreditation of educational programs (e.g., American Psychological Association, the Association of American Universities, and so forth).

The following presents the members of our Advisory Panel for Postsecondary Course Classification. Their specific comments regarding this classification project and the CIP as a basis for it are addressed in Section 3.0.

Panel Member	Title	Area Reviewed
Dr. Louis Albert	Director of Special Projects American Association for Higher Education	(17) Allied Health (18) Health Sciences
David L. Atkins	Professor and Department Chairman of Biology (The George Washington U.)	(26) Life Sciences
Dr. Richard H. Austing	Associate Professor of Computer Science Center for Adult Education (U. of Maryland)	(11) Computer and Information Sciences
Dr. John R. Beaton	Dean of the College of Human Ecology (U. of Maryland)	(19) Home Economics (20) Vocational Home Economics (32) Basic Skills (33) Citizenship/ Civic Activities (34) Health-Related Activities (35) Interpersonal Skills (36) Leisure and Recreational Activities (37) Personal Awareness

Panel Member	Title	Area Reviewed
Dr. Philip L. Brach	Dean, College of Physical Science, Engineering, and Technology (U. of the District of Columbia)	(15) Engineering and Engineering Related Technologies
Naomi Broering MLS, MA	Medical Center Librarian (Georgetown U.)	(25) Library and Archival Sciences
Dr. Dorothy Brown	Department of History (Georgetown U.)	(45.0801) History
Dr. Robert F. Carbone	Professor of Education Policy, Planning and Administration (U. of Maryland)	(13) Education
Dr. Valery Earle	Professor of Government (Georgetown U.)	(44.0101-44.0699) Public Affairs (45.0901) International Affairs (45.1001) Political Science and Government
Dr. Don Gallehr	Department of English (George Mason U.)	(23) Letters
Dr. Robert L. Gluckstern	Professor of Physics and Astronomy (U. of Maryland)	(27) Mathematics (40.0201) Astronomy (40.0301) Astro-Physics (40.0801-40.0899) Physics
Dr. Helen Grove		(19) Home Economics (20) Vocational Home Economics
Dr. James L. Hoerner	Associate Professor (Virginia Polytechnic and State U.)	(14) Engineering (15) Engineering and Related Technologies
Dr. Robert Holland	Associate Professor of Business Administration (The George Washington U.)	(06) Business and Management (07) Business and Office (08) Marketing and Distribution

Panel Member	Title	Area Reviewed
Dr. Donald Maley	Professor and Department Chairman of Industrial Education (U. of Maryland)	(21) Industrial Arts
Dr. Jesse Mann	Professor of Philosophy (U. of Maryland)	(38) Philosophy and Religion (39) Theology
Dr. C. Joseph Nuesse	Provost Emeritus of Sociology	(44.0701-44.0799) Social Work (45.1101) Sociology
Dr. Charles O'Rear	Professor and Department Chairman of Forensic Sciences (The George Washington U.)	(01) Agribusiness and Agricultural Production (02) Agricultural Sciences (03) Renewable Natural Resources
Dr. Theodore P. Perros	Chairman of Department of Chemistry	(40.0501-40.0599) Chemistry
Dr. C. James Scheirer	Health Science Administrator National Institutes of Health	(42) Psychology

2.3 Development of an Eight-Digit Coding Scheme

Utilizing the catalogs selected through the sampling plan described in Section 2.1, ASI staff began entering course titles, a brief description of course content for each title, and the appropriate six-digit placement of the course within CIP, into a Dbase II format on IBM PC floppy diskettes. It was quickly realized, however, that the a personal computer could not accommodate the sorting and merging of the large number of courses that would ultimately be involved in the classification (estimated near 26,000). Hence, an additional step was added. After completion of data entry on diskettes, the information was then uploaded into a file within ASI's VAX 11/750 minicomputer for further data manipulation.

The large volume of courses found in the sample of 60 school catalogs also necessitated that time be utilized as efficiently as possible. Thus, ASI personnel initially reviewed and entered data on fifteen catalogs from the sample. The VAX file of these coded courses and their descriptors was then sorted by their CIP six-digit code, and by title alphabetically within each CIP code and printed. Then, individual staff were assigned CIP sections, to be completed one at a time. The staff member would review the initial printout of that section, eliminating duplicate titles (which would

be later entered into a separate VAX file of "Alternate Titles" and given the same eight-digit code as the main course for which it was a duplicate). At the same time, they would correct any miscoded courses and any typographical errors in course titles.

Following this cleaning up of the preliminary CIP curriculum section, the staff member would then proceed to review the remaining catalogs for courses to be entered in that particular section only. Again, any alternate title was noted for later entry into the Alternate Title File.

Upon completion of a CIP section, ASI personnel mailed to the appropriate panel member a printout of that completed section, along with a detailed cover letter pinpointing questions as to correct coding and duplicate titles. Panel members were also asked to provide titles and course content of any missing courses as well as their general assessment of the classification effort and the CIP as a coding scheme for postsecondary courses.

Following panelist submission of their recommended revisions to the printout and other comments, ASI staff made final corrections to that CIP section. A final sort of that section on six-digit CIP code and alphabetically by course title within each of these CIP codes was made. The final two digits, which distinguished each unique course, was automatically assigned by the computer based on the alphabetical order of courses under each six-digit CIP code. Based on that assignment, alternate titles were coded with the same eight-digit code as the main course it was duplicating and both alternate title and its code were entered directly into a separate VAX file.

While each CIP section was being finalized in this way, an ASI Research Assistant entered into a third VAX file all CIP instructional program titles and their codes and descriptors. These were entered in capital letters to distinguish them from course titles and descriptors. The addition of the CIP data was done to assist the users of CSPEC in identifying the instructional program area in which various courses were placed.

Once all CIP sections were completed and reviewed by our Advisory Panel, several weeks were set aside for a final proofing of course descriptors and titles for correction of typographical errors.

The steps taken just prior to a final printout were essentially programming tasks. These involved the merging of the three VAX files already described (main file with course CIP code, title and descriptor; alternate title file; and CIP section file) and a final sorting based on the eight-digit CIP code. To facilitate the use of this large classification, ASI's final product provides two sections to the CSPEC. The first presents postsecondary undergraduate course titles in order of their eight-digit CIP code. A brief course description and all alternate titles are given under each code and title. The format of this presentation is as follows:

CIP CODE COURSE TITLE

DESCRIPTION

LISTING OF ALTERNATE TITLES (in alphabetical order)

In addition to the above listing based on eight-digit CIP codes, ASI is also providing an index which simply lists all course titles (main courses and alternate titles) alphabetically with their eight-digit CIP code. It is anticipated that this index will facilitate the coding of transcripts by allowing the coder to locate a course title and its code quickly. Only if that title could not be found in the Index would the coder then proceed to the more time-consuming process of finding that course based on its appropriate placement within the CIP and a review of courses and their descriptors under that CIP section to make a final selection of an eight-digit code. We note that ASI has set aside 99 (the final two digits possible under the system) for "Miscellaneous Courses" under any six-digit CIP section to cover unusual courses not provided in our project sample.

2.4 Try-Out of the Coding System on a Sample of Transcripts

The testing of a coding system was the essential last step in flagging problems in the system's usefulness to potential applications. That is, is it a workable tool in interpreting transcripts in order to analyze course-taking behavior? Utilizing catalogs of the 60 postsecondary institutions not coded from the original sample of 120 schools, ASI selected fifteen representing to the extent possible the control, level and geographic cells which formed the basis of our sampling plan. ASI requested that CES provide 40 transcripts from at least ten of these institutions for testing purposes.

ASI's experience in the project's coding efforts indicated that the type of coder who could best use the CSPEC would be someone with a college education. Hence, three coders we selected, all of whom were currently graduate students, to code the 40 transcripts provided by CES over a four-day period following one day of training. Details regarding test procedures, results and evaluation are presented in Section 4.0.

3.0 ADVISORY PANEL EVALUATION

The project's Panel of Advisors provided the input to ensure the consistency in approach and level of quality of the CSPEC. Specifically, they were asked to address the following questions in reviewing their particular CIP instructional program area:

(1) **Correct Coding** - Based on their interpretation of CIP sectional descriptors, were courses placed under the most appropriate CIP code?

(2) **Duplicate Courses** - Were any two courses treated as unique entries although their course contents were substantially the same?

(3) **Missing Courses** - Were any significant courses not included under each CIP category?

(4) **Evaluation of CIP** - How appropriate is the CIP in classifying the large number of highly diversified postsecondary course offerings?

In overall terms, the major coding problems requiring Panelist guidance fell into two categories. The first centered on the interpretation of certain CIP sections which proved troublesome to ASI coders because their descriptors were nonspecific. Based on the input of the Panel of Advisors and the expertise of inhouse staff, a clearer meaning was developed for those CIP sections presenting problems for consistent and appropriate coding. These clarifications are detailed by section in the following pages.

The second difficulty reflected a characteristic of college curricula; that is, courses of similar titles may be common to multiple instructional programs or similar general courses may be offered by different departments within an institution. An example of the latter would be an introductory statistics course. Such a course with similar content and title, but different emphasis might be offered by the business, psychology and education departments. ASI determined that the best approach in working around this dilemma was to distinguish these duplicate-titled courses by adding the section in which they should be placed within the title, itself. Again, with regard to our example, we might have "Introduction to Statistics in Business", "Introduction to Statistics in Psychology", or "Introduction to Statistics in Education". This approach, of course, requires that the coder refer first to the school catalog to learn which department or instructional program area is offering a particular course on the transcript before making a coding decision.

The focus of the pages which follow will be on how ASI's general approach to these two major problems were applied to the individual sections of the CIP. In addition, special note has been made of Panelist comments regarding other issues relating to the coding effort. Our objective here is not only to lay out our methods of coding the various CIP instructional program areas, but also to provide useful guidelines for future coders using the CSPEC.

Those CIP sections not presenting any unusual coding problems have not been included in the following section-by-section review. These comprise:

Section	Number	Panelist, if Any
Renewable Natural Resources	03	Dr. Charles O'Rear
Military Sciences	28	
Military Technologies	29	
Parks and Recreation	31	
Citizenship/Civic Activities	33	
Interpersonal Skills	35	
Personal Awareness	37	
Archeology	45.03	
Demography	45.05	
Geography	45.07	
Sociology	45.11	Dr. C.Joseph Nuesse
Urban Studies	45.12	
Construction Trades	46	
Transportation and Moving Materials	49	

We also reiterate that this project confined itself to undergraduate courses only. Hence, course listings under such areas as Law (22) and Health (18) were limited.

CIP SECTION: Agribusiness and Agricultural Production (01)

PANELIST: Dr. Charles O'Rear
Professor and Chairman of Forensic Sciences
The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The distinction between **Agribusiness and Agricultural Production** (01) and **Agricultural Sciences** (02) is drawn as follows: Emphasis in Section 01 is on the application of business principles and operations in agriculture, while Section 02 deals with the scientific aspects of agriculture.

Similar Courses in Two or More CIP Sections

- Same-titled courses are found among the following CIP sections dealing with agriculture: **Agribusiness and Agricultural Production** (01), **Agricultural Engineering** (14.03), and **Agricultural Education** (13.1301). The section in which these courses should be placed is identified in the course title to assist coders. Coders should refer to the school catalog to ascertain which department or instructional program area is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Agricultural Sciences (02)

PANELIST: Dr. Charles O'Rear
Professor and Chairman of Forensic Sciences
The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The distinction between **Agribusiness and Agricultural Production** (01) and **Agricultural Sciences** (02) is drawn as follows: Emphasis in Section 01 is on the application of business principles and operations in agriculture, while Section 02 deals with the scientific aspects of agriculture.

Similar Courses in Two or More CIP Sections

- Same-titled courses are found among the following CIP sections dealing with agriculture: **Agricultural Sciences** (02), **Agricultural Engineering** (14.03), and **Agricultural Education** (13.1301). The section in which these courses should be placed is identified in the course title to assist coders. Coders should refer to the school catalog to ascertain which department or instructional program area is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Architecture and Environmental Design (04)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The descriptor given for the CIP section entitled **Environmental Design** (04.0401) will present a problem to coders because it's meaning is unclear. Hence, for the purposes of this classification, ASI staff has arbitrarily interpreted the section as including courses dealing with building environmental systems such as illumination and temperature control.

Similar Courses in Two or More CIP Sections

- There are three CIP sections which relate to Architecture may include very similar basic courses. These are **Architecture** (04), **Architectural Engineering** (14.04), and **Architectural Technologies** (15.01). In general, architecture courses in the engineering curricula are more technical or mathematical oriented. If possible confusion existed in the title as to correct coding, the name of the section was added to the title. Coders should refer to the school catalog to ascertain which department or instructional program area is offering the course in question prior to making a coding decision.

- Coding architectural drafting courses proved most difficult to coders because in addition to the three related CIP sections in Architecture specified above, a fourth option in **Architectural Drafting** (48.0102) is presented in the CIP. ASI interpreted the latter section as encompassing simply instruction in reading blueprints, not in drafting blueprints. Again, the coder is cautioned to reference the school catalog to pinpoint the department offering the drafting course. As in other cases of similar courses coded in different sections, ASI has added to the title the instructional program section under which the course would fall.

CIP SECTION: Area and Ethnic Studies (05)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found among the following CIP sections: **Area and Ethnic Studies** (05), **History** (45.08), and **Languages** (16). The courses most often falling in this category are "History" and "Civilization" for particular regions or countries of the world. The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or instructional program area is offering the course prior to making a coding selection.

CIP SECTION: Business (06)

PANELIST: Dr. Robert Holland
Associate Professor of Business
The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The distinction drawn between **Banking and Finance** (06.03) and **Business Economics** (06.05) is based on coding quantitative business courses under Banking and Finance, while placing theoretical economic business courses under Business Economics. A course in Cost Benefit Analysis, although encompassing some theoretical aspects, is placed under Banking and Finance because its emphasis is on the quantitative. At present, only one course entitled "Business Economics" is coded under the Business Economics Section.

- The distinction drawn between **Human Resources Management** (06.06) and **Personnel Management** (06.16) is based on the following: broad courses pertaining to the training and career development of employees, such as "Issues in Employee Relations", are placed under Human Resources Management; courses dealing with more specific areas in personnel management, such as "Employee Compensation Systems: Theory and Practice", were coded under Personnel Management.

- The CIP section on **Institutional Management** (06.07) is divided into five subsections (Hotel Management, Restaurant Management, etc.). When an individual course covers more than one institutional management area (as, for example, "Hotel-Restaurant Management", it is coded under the subsection that appears first in its title. If a course does not relate to any of the subsections, it is placed under **Institutional Management, Other** (06.0799).

- Under **Business Management, Other** (06.9999) are coded business classes which are not appropriate to any of the specific CIP sections under Business. These include such courses as "Business Algebra" and "Business Law".

Similar Courses in Two or More CIP Sections

- Varying types of management courses are found in numerous CIP Instructional Programs. These may range from "Parks Recreation Management" to "Arts Management". Management courses which are geared toward the management profession as a whole, rather than to a specific area, are placed in the Business and Management (06).

ADDITIONAL PANELIST COMMENTS, IF ANY:

- **Recommendation to Merge Certain CIP Sections**

  Dr. Holland suggested that the CIP would be more appropriate for the Business and Management Curriculum if the following combinations were made:

  - **Contract Management and Procurement/Purchasing** (06.0402) should be eliminated and its courses coded under **Purchasing** (08.0704).
  - **Investments and Securities** (06.10) and **Securities and Commodities Marketing** (08.0406) should be eliminated and their courses coded under **Banking and Finance** (06.03).
  - **Management Information Systems** should be eliminated and its courses coded under **Business Systems Analysis** (07.0306).
  - **Banking and Related Financial Programs** (07.02) should be eliminated and its courses placed under **Financial Services Marketing** (08.04).

- **Placement of Distribution Courses**

  Dr. Holland indicated that some schools place Distribution courses in their Marketing Departments, whereas his preference would be in a department for Production and Operations (not included in the CIP).

- **Placement of Money and Banking Courses**

  Dr. Holland cautioned that the department offering Money and Banking Courses varied by college. In some, the course is found in the Economics Department; in others, the Finance Department. This variation among schools holds true for a number of business courses.

CIP SECTION: Business and Office (07)

PANELIST: Dr. Robert Holland
Associate Professor of Business
The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The distinction drawn between **Business and Office** (07) and **Business** (06) or **Computer and Information Sciences** (11) is as follows: courses coded in Section 07 are extracted almost exclusively from two-year schools. The curriculum under **Business and Office** represents preparation for support staff in business or financial organizations, rather than management training. Secretarial Sciences, for example, fall into this section.

- As an exception within the **Business and Office** Section (07), the subsection, **Business Data Processing** (07.03) does contain courses from both two-year and four-year institutions pertaining to basic computer programming and data processing as used in the office environment. The distinction drawn between this subsection and **Data Processing** (11.03) under the Computer Science curriculum is based simply on whether the course is offered under the school's Business or Computer Science department. The assumption here is that each department would approach the area of data processing differently.

- The distinction drawn between **Office Supervision and Management** (07.04) and **Personnel Management** (06.16) or **Human Resource Management** (06.0601) is as follows: **Office Supervision and Management** courses cover those geared toward secretaries and office managers.

- No courses were found within our sample for **Personnel and Training Programs** (07.05).

- All secretarial cooperative programs are coded under **Secretarial and Related Programs, General** (07.0601).

- The distinction drawn between **Executive Secretarial** (07.0603) and **Secretarial** (07.0606) is drawn as follows:

only courses with "executive secretary" within its title are coded under **Executive Secretarial** (for example, "Specialized Secretarial Training: Executive"). All other secretarial courses, with exception of those in specialized areas such as medical or legal, are placed under **Secretarial**.

- Few courses were coded under **Typing, General Office and Related Programs** (07.07) because of the overlap with secretarial courses under Section 07.06. The subsections on **Typing** (07.0710) and **Clerk-Typist** (07.0702), however, do contain courses and should, therefore, not be overlooked by coders.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

Refer to CIP Section 06 (Business).

CIP SECTION: Marketing and Distribution (08)

PANELIST: Dr. Robert Holland
Associate Professor of Business
The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The section on **Marketing and Distribution** (08) breaks down the general curriculum into many specialized subsections. This level of specialization did not reflect the programs offered by the sample of schools utilized. Hence, many of these subsections contain no courses.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

Refer to CIP Section 06 (**Business**).

CIP SECTION: Communications (09)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Courses dealing with the business-side of advertising are coded under **Advertising** (09.02), while those addressing advertising illustration are placed under **Commercial Art** (48.0203).

Similar Courses in Two or More CIP Sections

None.

CIP SECTION: Communications Technology (10)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- The distinction drawn between **Photographic Technology** (10.0103) and **Commercial Photography** (48.0204) or **Photography** (50.0605) is based on the objective of the specific curriculum. Courses under **Photographic Technology** prepare technicians for uses of photography in specialized communication fields; courses in the two other curricula are oriented toward the artistic uses of photography.

CIP SECTION: Computer and Information Sciences (11)

PANELIST: Dr. Richard Austing
Associate Professor of Computer Science
Center for Adult Education
University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The descriptors provided by CIP for the section on Computer and Information Sciences (11) were not representative of the breakdown of courses found in the sample of schools. Dr. Austing's interpretations of the descriptors to conform more closely with actual college curricula in this area are given below.

- Computer and Information Sciences, General (11.01) is interpreted as covering four-year computer science curriculum to include artificial intelligence, graphics, organization and architecture of computer systems, programming languages and software engineering, theory of computing, data base design, and numerical analysis.

- Computer Programming (11.02) includes courses whose primary goal is programming (often lower-level courses in the computer science curriculum--reference Section 11.01).

- Courses under Data Processing (11.03) are found in one- or two-year programs leading to entry-level programming, data entry, computer operation, and other business-related areas.

- Courses coded under Information Sciences and Systems (11.04) lead to a four-year degree in business information systems and include systems analysis, system design, data base implementation, management, organizational concerns, and office automation.

- Systems Analysis (11.05) would include advanced courses leading to an information systems degree (reference Section 11.04). This section is left empty because in CSPEC course level as not a coding factor.

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found in both **Computer and Information Sciences** (11) and **Computer Engineering** (14.09). As a general rule of thumb, the courses coded in the **Computer Engineering** Section are more technically-oriented. To further assist coders, however, the section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or instructional program area is offering the course prior to making a coding decision.

- Similarly-titled courses are also found in **Computer and Information Sciences** (11), **Business** (06), **Business and Office** (07), and **Marketing and Distribution** (08). The section in which these courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or instructional program area is offering the course prior to making a coding decision.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Consumer, Personal and Miscellaneous Services (12)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The distinction drawn between **Umpiring** (12.0204) and **Coaching** (13.1314) is as follows: Umpiring prepares individuals to officiate athletic games, while coaching prepares an instructor to improve game performance of athletes.

Similar Courses in Two or More CIP Sections

None.

CIP SECTION: Education (13)

PANELIST: Dr. Robert F. Carbone
Professor of Higher and Adult Education
University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The distinction between **Curriculum and Instruction** (13.03), **Teacher Education, General Programs** (13.12), and **Teacher Education, Specific Subject Areas** (13.13) is drawn as follows: Courses under **Curriculum and Instruction** cover ways of developing actual curricula; **Teacher Education** courses, on the other hand, emphasize how to teach rather than the material or planned curricula used to teach.

- Courses preparing students to work as extension agents are coded under **Agricultural Education** (13.13). Coders should note that not every school offers extension education courses in the education department. Some offer the program in the agriculture department.

- Many educators make a distinction between junior high education and middle school education. Junior high schools typically offer instruction to students in grades seven through nine, while middle schools educate students in grades five through nine. Since CIP does not make such a distinction, courses related to both types are coded in **Junior High Education** (13.1203).

- The distinction among **Industrial Arts Education** (13.1309), **Technical Education** (13.1319), and **Trade and Technical Education** (13.1320) is as follows: The **Industrial Arts Education** program is typically meant to prepare instructors to teach students skills for personal use rather than for career training. The differences between **Technical Education** and **Trade and Technical** is more nebulous and, under CSPEC, courses are coded according to whether they emphasized specific technical training or more general industrial/occupational training. Coders are advised to check the school catalog for course descriptions and the department offering the course prior to making a final coding decision.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Carbone considered many of the courses in the sample to be on the graduate level, although they were found in undergraduate programs. It would appear, therefore, that what at one school would be considered a upper-level undergraduate course would at another be a graduate course.

- **Education and Research** (13.06) is not an area typical to undergraduate programs.

- Dr. Carbone did not view **Education, General** (13.01) useful for coding purposes.

CIP SECTION: Engineering (14)

PANELIST: Dr. James L. Hoerner
Associate Professor of Education
Virginia Tech Graduate Center
Virginia Polytechnic Institute and State University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- It is important that the coder reference the school catalog to ascertain which engineering department is offering the course to be coded. Given the highly technical nature of engineering courses, it is difficult for a coder with a non-engineering background to code courses in this area based on course title or description alone.

Similar Courses in Two or More CIP Sections

- Similarly-titled courses may be found across the following CIP Sections:
  - Among the subsections under **Engineering** (14).
  - Between **Engineering** (14) and **Engineering Technology** (15).
  - Between **Engineering** (15) and other non-Engineering CIP Sections. (A prime example of this would be those sections dealing with Architecture, including Architectural Engineering (14.04), Architectural Technologies (15.01), Architectural Drafting (48.0102), and Architecture (04.02).)

  In all such cases, the section in which these courses should be placed is identified in the course title to assist coders. Coders should refer to the school catalog to ascertain which department of instruction is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Hoerner commented that the current breakdown of coding areas in CIP (and thus the CSPEC) appears to be adequate, and that a national sample would fill those areas currently having a low number of courses. He estimated, however, that as new technologies are developed, there will be a need for new categories.

CIP SECTION: Engineering and Engineering-Related Technologies (15)

PANELISTS: Dr. Philip L. Brach
Dean, College of Physical Science,
Engineering and Technology
University of the District of Columbia

Dr. James L. Hoerner
Associate Professor of Education
Virginia Tech Graduate Center
Virginia Polytechnic Institute and State University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- It is important that the coder reference the school catalog to ascertain which engineering department is offering the course to be coded. Given the highly technical nature of engineering courses, it is difficult for a coder with a non-engineering background to code courses in this area based on course title or description alone.

Similar Courses in Two or More CIP Sections

- Similarly-titled courses may be found in Engineering and Engineering-Related Technologies (15) and Engineering (14) or other non-engineering CIP sections. In such cases, the section in which these courses should be placed is identified in the course title to assist coders. Coders should refer to the school catalog to ascertain which department of instruction is offering the course prior to making a coding decision.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Hoerner commented that the current division of Engineering Technology areas in the CIP (and thus the CSPEC) is adequate and that a national sample would fill those areas that currently have low numbers of courses. He estimated, however, that with the development of new technologies, new categories will have to be added.

CIP SECTION: Foreign Languages (16)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- Civilization courses are found under **Foreign Languages** (16), **Area and Ethnic Studies** (05), and **History** (45.08). The section in which such courses should be coded are identified in the course title. Coders should refer to the school catalog to ascertain which department is offering the course prior to making a coding decision.

- Literature courses appear under both **Foreign Languages** (16) and **Letters** (23). The section in which such courses should be coded are identified in the course title. Coders should refer to the school catalog to ascertain which department is offering the course prior to making a coding selection.

CIP SECTION: Allied Health (17)

PANELIST: Dr. Louis Albert
Director of Professional Services
American Association for Higher Education

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The section entitled **Animal Technology** (17.0501) contains courses which, at some schools, might fall under programs in **Veterinarian Assisting** (17.0512), **Veterinarian Aide** (17.0511), or **Clinical Animal Technology** (17.0303). The courses found in the CSPEC sample were not adequately specialized to warrant individual categories and all such courses are coded under **Animal Technology**.

- Courses coded under **Occupational Therapy** (17.0807) include those which, at some schools, might be under instructional program areas called **Occupational Therapy Assisting** (17.0808) or **Occupational Therapy Aide** (17.0809).

- Courses coded under **Physical Therapy Assisting** (17.0815) include those which, at some schools, might be under instructional program areas called **Physical Therapy** (17.0813) or **Physical Therapy Aide** (17.0814).

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Albert noted that the CIP distinction between **Allied Health** and **Health Sciences** is vague and makes coding postsecondary courses difficult.

- Dr. Albert suggested that **Speech Pathology** (18.0103) and **Nursing** (18.11) would be more appropriately placed under the Allied Health area (17) than under Health Sciences (18).

CIP SECTION: Health Sciences (18)

PANELIST: Dr. Louis Albert
Director of Professional Services
American Association for Higher Education

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- All audiology and speech pathology courses are coded under **Speech Pathology/Audiology** (18.0103), in lieu of utilizing **Audiology** (18.0101) or **Speech Pathology** (18.0102).

- Dentistry is not an undergraduate program. Therefore, the section on **Dentistry** (18.04) contains no courses.

- Medicine is not an undergraduate program. Therefore, the section on **Medicine** (18.10) contains no courses.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY

Refer to **Allied Health** (17).

CIP SECTION: Home Economics (19)

PANELIST: Dr. John R. Beaton
Professor of Food, Nutrition and Institution Administration
Dean of the College of Human Ecology
University of Maryland

and

Dr. Helen Grove
Alexandria, Virginia

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Dr. Grove clarified the distinction between Home Economics (19) and Vocational Home Economics (20) as follows:

  Home Economics prepares professionals to work with business, industry, human services, and other organizations.

  Vocational Home Economics prepares instructors to teach in high school vocational home economics programs (preparing high school students for employment rather than to enhance personal skills).

Similar Courses in Two or More CIP Sections

- Dr. Grove pointed out that in a curriculum such as Home Economics "extensive duplication of course listings is essential" when areas such as dietetics, human nutrition, and food science naturally overlap in some ways. Since there are thus similarly-titled courses in two or more subsections of Home Economics, the sections in which these courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain more precisely which Home Economics program is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Beaton recommended that since **Consumer Science** (19.0402) and **Family Economics** (19.0403) are essentially the same, these sections should be merged.

- Dr. Grove judged that **Home Economics, General** (19.01) would not be statistically useful to analysts since very few courses merit coding in this area.

- Dr. Grove indicated that the heavy concentration of courses in **Fashion Design** (19.0902) in the CSPEC was unusual since the more prevalent pattern is to have a larger number courses focusing on **Textiles and Clothing** (19.0901, 19.0903, 19.0904) with only a few specialized fashion design courses.

- Dr. Beaton suggested the addition of a **Fashion Merchandising** category to **Home Economics** (20). Currently the CIP places these courses dealing with fashion merchandising in **Marketing and Distribution** (08).

- Dr. Grove suggested the inclusion within **Home Economics** (20) of sections on **Interior Design** (with a different emphasis than the **Interior Design** program listed under 04.05), **Hotel/Motel Management** (currently coded under 06.0701), and **Restaurant Management** (currently coded under 06.0704).

- Dr. Grove was not entirely satisfied with the accuracy of the representation provided by CSPEC of Home Economics courses. She stated that the CIP taxonomy causes some problems for classifying postsecondary courses, but that the sample of courses might also be at fault.

- Dr. Beaton suggested that a course on Housing Issues and Prospects should be included in the Home Economics curriculum under **Human Environment and Housing** (19.06). This course covers social and economic issues associated with production, consumption, and regulation of housing. With the current version of CSPEC, this course would be coded under the 8-digit unique code for "Miscellaneous" courses.

CIP SECTION: Vocational Home Economics (20)

PANELIST: Dr. John R. Beaton
Professor of Food, Nutrition and Institution Administration
Dean of the College of Human Ecology
University of Maryland

and

Dr. Helen Grove
Alexandria, Virginia

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Dr. Grove clarified the distinction between Home Economics (19) and Vocational Home Economics (20) as follows:

  Home Economics prepares professionals to work with business, industry, human services and other organizations.

  Vocational Home Economics prepares instructors to teach in high school vocational home economics programs (preparing high school students for employment rather than to enhance personal skills).

Similar Courses in Two or More CIP Sections

- Dr. Grove pointed out that in a curriculum such as Home Economics "extensive duplication of course listings is essential" when areas such as dietetics, human nutrition, and food science naturally overlap in some ways. Since there are thus similarly-titled courses in two or more subsections of Home Economics, the sections in which these courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain more precisely which Home Economics program is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Beaton recommended the addition of a new category to the CIP **Vocational Home Economics** (20) section to be entitled **Textile Design** (not related to Fashion Design). This category would include textile construction courses. The CSPEC which is based on the CIP places courses in textile construction under **Clothing and Textiles** (20.0103). Dr. Beaton indicated the following courses presently in the CSPEC would be more appropriately coded under the new **Textile Design** category:

  Computer Graphics in Textile Design
  Creative Principles of Textile Design
  Decorative Fabrics
  Design for Knitted Fabrics
  Experimental Screen Printing in Textile Design
  History of Textiles
  Lace and Embroidery Design
  Painted Woven Design
  Portfolio Collection for the Textile Designer
  Printed Fabrics
  Printing for Fabrics
  Rug and Tapestry Weaving in Textile Design
  Screen Printing: Scarves
  Studio Practices in Textile Design
  Surface Design: Advanced Wallcoverings
  Surface Design: Bedroom/Bathroom
  Surface Design: Introduction to Fiberarts
  Surface Design: Kitchen/Dining Room
  Surface Design: Print Media Graphics
  Surface Design: Printed Rugs and Carpeting
  Textile Design
  Woven Design

CIP SECTION: Industrial Arts (21)

PANELIST: Dr. Donald Maley
Professor and Department Chairman,
Industrial Education
University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Dr. Maley drew the distinction between **Industrial Arts** (21) and **Vocational Education** (such as the CIP sections on **Construction Trades** (46), **Mechanics and Repairers** (47) and **Precision Production** (48)) as follows:

  > **Industrial Arts/Technology Education** encompasses the phase of general education which deals with technology, its development, utilization and significance, and with industry, its organization, products, processes, and materials, as well as the problems and benefits resulting from an industrial society.
  >
  > **Vocational Education** is a form of education which enables the student to enter into gainful employment, and to progress in that endeavor.

- Dr. Maley advised that the category **Graphic Arts** (21.0106) has been broadened and is now generally referred to as "Graphic Communications."

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found under the Industrial Arts subsection, **Construction** (21.0102), and **Construction Trades** (46). The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or program is offering the course prior to making a coding selection.

- Similarly-titled courses are found under the Industrial Arts subsection, **Drafting and Design** (21.0103), **Drafting** (48.01) and **Drafting and Design Technology** (15.0202). The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or program is offering the course prior to making a coding selection.

- Similarly-titled courses are found under the Industrial Arts subsection, **Electricity/Electronics** (21.0104, **Electrical and Electronic Technologies** (15.03), **Electrical, Electronics and Communications Engineering** (14.10), and **Electrical and Electronics Equipment Repair** (47.01). The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or program is offering the course prior to making a coding selection.

- Similarly-titled courses are found under the Industrial Arts subsection, **Graphic Arts** (21.0106), **Graphic and Printing Communications** (48.02), **Graphic Arts Technology** (50.0801), and **Graphic Design** (50.0402). The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or program is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Given the distinction drawn between Industrial Arts Education and Vocational Education, Dr. Maley believed the following courses currently under the Industrial Arts section were not appropriate to that curriculum:

  Commercial Building
  Heating and Air Conditioning
  Mechanical Systems

  We note that these courses were coded under Industrial Arts because they appeared under the Industrial Arts program at the schools in the CSPEC sample.

- Dr. Maley's was of the view that uniformity in course offerings among postsecondary institutions needs to be achieved in the industrial arts education profession.

CIP SECTION: Letters (23)

PANELIST: Dr. Donald Gallehr
English Department
George Mason University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Dr. Gallehr indicated that **Comparative Literature** (23.03) usually refers to European, Oriental, and other foreign authors only, not to include English or American writers. The CIP definition of this section, however, covers literature dealing with selected themes and periods of time, as well as language source. Hence, English and American authors falling into these areas are currently coded under this section.

- Note that journalism courses are coded under a specific CIP area entitled **Journalism** (09.04).

- CIP defines the section, **Letters, General** (23.01), as "the skills and techniques essential to learning the English language." This definition does not clearly indicate whether general or remedial courses are both should be coded under the section. In the CSPEC, all remedial courses, including those in English, are coded under **Basic Skills** (32).

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found under **Classics** (23.02), **Classical Greek** (16.0601) and **Latin** (16.0903). The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or program is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Liberal/General Studies (24)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Note that this section was used for coding only when a school catalog specifically identified a course as one belonging to liberal or general studies and thus not a part of any specific degree program.

Similar Courses in Two or More CIP Sections

None.

CIP SECTION: Library and Archival Sciences (25)

PANELIST: Naomi C. Broering, MLS, MA
Medical Center Librarian
Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Ms. Broering commented that library degree programs should always include theoretical subjects with heavy concentration on instructions and applications coursework.

- Ms. Broering agreed with the CIP differentiation between libraries, archives, and museums and found the CIP curriculum breakdown in the area of Library Science "quite comprehensive."

CIP SECTION: Life Sciences (26)

PANELIST: Dr. David L. Atkins
Professor and Department Chairman of Biology
The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Atkins expressed some reservation regarding several of the classes coded under Neurosciences (26.0608), although all courses coded in this section were offered by the biology departments of the schools in the CSPEC sample. He believed that the following courses in particular may have been more appropriately placed under Physiological Psychology (42.11):

  Biology of Behavior Disorders (26.060801)
  Brain and Behavior Neurosciences (26.060802)
  Language and the Brain (26.060805)
  Neural Mechanisms of Learning (26.0807)
  Psychobiology (26.060811)

- Dr. Atkins recommended renaming the section, Zoology, General (26.0701), "Organismic Zoology" to encompass all organisms rather than solely humans and animals.

- Dr. Atkins suggested the elevation of Genetics (26.0703) to major category status since it has become a prominent area of the Life Sciences. The classes currently coded in the CSPEC that he would place in this new category would be the following:

  Advanced Genetics (26.010102)
  Cytogenetics in Biology (26.010107)
  Experimental Genetics (26.010110)
  Genetics (26.010113)
  Physiological Genetics (26.010118)
  Genetic Engineering (26.020116)
  Plant Genetics (26.030401)
  Molecular Genetics (26.040205)
  Structure and Function of Euraryotic Chromosomes (26.040206)
  Bacterial Genetics (26.050103)
  Genetics and Development in Animals (26.070301)
  Human Genetics (26.070302)

- Dr. Atkins believed the CIP section on Life Sciences would be improved if the following combinations of subsections were made as they represent essentially identical areas or contain similar courses:

  - Microbiology (26.0501) and Bacteriology (26.0302)
  - Toxicology (26.0612) and Pharmacology (26.0705)
  - Pathology (26.0704) and Parasitology (26.0610)
  - Biochemistry and Biophysics (26.0201) and Molecular Biology (26.0302)

CIP SECTION: Mathematics (27)

PANELIST: Dr. Robert L. Gluckstern
Professor of Physics and Astronomy
University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Under **Pure Mathematics** (26.0401), each level of Calculus was given a unique course code, as each addressed a unique and different mathematical area, as follows:

  Calculus I (27.040111) - Introductory, Elementary
  Calculus II (27.040112) - Analytical
  Calculus III (27.040113) - Multivariate
  Calculus IV (27.040114) - Differential Equations

- Dr. Gluckstern drew the distinction between **Mathematics, General** (27.01) and **Pure Mathematics** (27.04) as follows: **Mathematics, General** includes elementary courses, while **Pure Mathematics** covers a variety of advanced specialties.

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found under **Statistics** (27.05) and a number of other disciplines, such as business and education. The sections in which these courses should be placed are identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY

- Dr. Gluckstern believed that the category, **Pure Mathematics** (27.04) was much too broad, and it might be worthwhile to split it into different, more specific areas.

CIP SECTION: Multi/Interdisciplinary Studies (30)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- With the exception of **Women's Studies** (30.07), courses were coded under **Multi/Interdisciplinary Studies** only when the school catalog specifically identified them as multidisciplinary and not part of a specific degree program. These courses are generally meant to complement or enrich a student's education.

- All courses focusing expressly on women were coded under **Women's Studies** (30.07) irregardless of the school department offering the course.

Similar Courses in Two or More CIP Sections

None.

CIP SECTION: Basic Skills (32)

PANELIST: Dr. John R. Beaton
Professor of Food, Nutrition and Institution Administration
Dean of the College of Human Ecology
University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Courses coded under **Basic Skills** (32) are remedial or those identified as needed by students in order to reach college-level ability in a particular subject area. Included in this category are special courses for international students. Since it is often difficult to determine whether a course is remedial from its title, coders are cautioned to check the school catalog's description of the course prior to selecting a code. A good indicator that a course is remedial is if no credit hours toward a degree are given for its completion.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Health-Related Activities (34)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The CIP section on **Health Enhancement Practices** (34.0103) may be easily confused with **Sports/Physical Education** (36.0108). The physical activities coded under **Health Enhancement Practices** specifically relate to assisting an individual in improving his physical and emotional wellbeing and include such courses as:

Aerobics	(34.010301)
Body Conditioning	(34.010303)
Weight Training	(34.010311)
Jazz Exercise	(34.010305)
Jogging and Calisthenics	(34.010306)

Similar Courses in Two or More CIP Sections

None.

CIP SECTION: Leisure and Recreational Activities (36)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The CIP section on **Health Enhancement Practices** (34.0103) may be easily confused with **Sports/Physical Education** (36.0108). The physical activities coded under **Health Enhancement Practices** specifically relate to assisting an individual in improving his physical and emotional wellbeing and include such courses as:

Aerobics	(34.010301)
Body Conditioning	(34.010303)
Weight Training	(34.010311)
Jazz Exercises	(34.010305)
Jogging and Calisthenics	(34.010306)

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found in both **Sports/Physical Education** (36.0108) and **Physical Education** (13.1314). The former represent participatory courses for all students; the latter are geared toward prospective physical education teachers. For such courses, the section in which they should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program offers the course prior to making a coding selection.

CIP SECTION: Philosophy and Religion (38)

PANELIST: Dr. Jesse Mann
Professor of Philosophy
Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- The "Philosophy of" a specific discipline often appears in different sections of the CSPEC. The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding selection.

- Similarly-titled courses are found both under **Religion** (38.0201) and **Theology** (39). The section in which these courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Mann suggested that the following courses missing from the CSPEC are offered in a growing number of philosophy degree programs: Philosophy and Public Policy, the Philosophy of Hume and DesCartes, and Ethics and the Media (focusing on ethical problems such as invasion of privacy, censorship, and confidentiality encountered in the media. With the current version of CSPEC, these courses would be coded under the 8-digit unique code for "Miscellaneous" courses.

CIP SECTION: Theology (39)

PANELIST: Dr. Jesse Mann
Professor of Philosophy
Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found both under Religion (38.0201) and Theology (39). The section in which these courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to coding selection.

- Dr. Mann cautioned that at some religious institutions almost all courses have the term "Christian" in their title, although they may be offered under a department or degree program other than theology. Coders should refer to school catalogs to verify the correct coding of courses at such schools.

ADDITIONAL PANELIST COMMENTS, IF ANY

None.

CIP SECTION: Physical Sciences (40)

CIP SUBSECTION: Astronomy (40.02)
Astrophysics (40.03)
Physics (40.08)

PANELIST: Dr. Robert L. Gluckstern
Professor of Physics and Astronomy
University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Gluckstern expressed surprise that more courses had not been found in the CSPEC sample to code under Fluids and Plasmas (40.0805).

CIP SECTION: Life Sciences (40)

CIP SUBSECTION: Chemistry (40.05)

PANELIST: Dr. Theodore Perros
Professor and Chairman of the Department of Chemistry
The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Dr. Perros indicated that **Pharmaceutical Chemistry** (40.0505) is a graduate level program. Hence, no courses are coded in this category for the CSPEC.

- No specific section is designated by the CIP for courses in Nuclear Chemistry. Courses in this area are coded under **Chemistry, Other** (40.0599) for the purposes of the CSPEC.

Similar Courses in Two or More CIP Sections

- Dr. Perros noted that some courses could be coded either of two ways depending on the focus of the subject matter. Without knowing the emphasis of the course, coding decisions become arbitrary. For example, Electrochemistry (40.050604) could be placed under **Analytical Chemistry** (40.0502) or **Physical Chemistry** (40.0506), depending upon the extent to which theory was emphasized.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Perros recommended the splitting of large areas, such as Chemistry, into smaller subdivisions to improve the coding process. However, he cautioned that this would also lead to more cases where one course might fit into several areas. The trade-off would have to be carefully analyzed before changing the current categorization.

CIP SECTION: Science Technologies (41)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- Science Technologists are trained to assist scientists and engineers. Similarly-titled courses are found under **Science Technologies** (41) and under **Physical Sciences** (40). The section in which such courses should be placed is identified in the course title. The coder should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding decision.

CIP SECTION: Psychology (42)

PANELIST: Dr. C. James Scheirer
Health Science Administrator
National Institutes of Health

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- Statistics for Psychology is distinct from Mathematical Statistics and is coded under Quantitative Psychology (42.15).

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Scheirer suggested that the following CIP sections are similar enough to be grouped together for coding purposes:
  - Clinical Psychology (42.02), Community Psychology (42.04), and Counseling Psychology (42.06).
  - Personality Psychology (42.10) and Social Psychology (42.16).
  - Physiological Psychology (42.11) and Psychopharmacology (42.14).
- Dr. Scheirer also indicated that the following areas are adequately represented with coursework to merit their own separate CIP categories:
  - History and Systems (covering current topics in psychology from historical and theoretical perspectives).
  - Statistics and Methodology (an estimated 10 percent of psychology courses may fall in this area).

- Dr. Scheirer co-authored The Undergraduate Psychology Curriculum (1984) for the American Psychological Association which divided psychology courses into a hierarchical system. He believed this system is more appropriate for postsecondary course classification since it takes into account the close relationships of certain aspects of psychology. The curriculum breakdown is given below.

I. Introductory

II. Experimental

- A. General Experimental
- B. Sensation and Perception
- C. Motivation
- D. Learning
- E. Cognition
- F. Language
- G. Comparative

III. Physiological

IV. Statistics

V. Developmental

- A. General Developmental
- B. Child
- C. Adolescent
- D. Adult
- E. Aging

VI. Social/Personality

- A. General Social
- B. Personality
- C. Environmental
- D. Minority Issues
- E. Consumer

VII. Clinical

- A. General Clinical
- B. Abnormal
- C. Assessment
- D. Counseling
- E. Sexuality
- F. Community
- G. Behavioral Medicine
- H. Other Clinical

VIII. Industrial/Organizational

A. General Industrial/Organizational
B. Human Factors

IX. Adjustment/Personal Development

A. Adjustment/Personal Development
B. Human Relations
C. Personal Mental Health

X. History/Systems

XI. Educational Psychology

XII. Special Topics

XIII. Seminar Courses

XIV. Other

CIP SECTION: **Protective Services (43)**

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- **Correctional Administration** (43.0101) includes courses providing instruction in jail/institution management.

- **Corrections** (43.0102) includes courses providing instruction in the practices/methods of incarceration and rehabilitation of criminal offenders.

- No courses were coded under **Criminal Justice Administration** (43.0103) as it was determined that this CIP section overlapped with **Law Enforcement** (43.0107).

- Courses coded under **Criminal Justice Studies** (43.0104) describe the criminal justice system, and its laws, theories and problems. This section is more general than the other subsections under **Protective Services**.

- **Criminal Justice Technology** (43.0105) includes courses providing instruction in the methods and tools of criminal investigation.

- Courses coded under **Forensic Studies** (43.0107) provide instruction in the medical factors of legal problems.

- **Law Enforcement** (43.0107) includes courses providing instruction in police operations and methods.

- **Law Enforcement Administration** (43.0108) includes courses providing instruction in police supervision and management.

- Coders have experienced confusion between the CIP section on **Protective Services** (43) and that on **Criminology** (45.04). The latter focuses the social aspects of crime and rehabilitation of offenders. **Protective Services** includes coursework providing instruction on the methods of combating and rehabilitating criminals.

CIP SECTION: Public Affairs (44)

CIP SUBSECTION: Public Affairs, General (44.01)
Community Services (44.02)
International Public Service (44.03)
Public Administration (44.04)
Public Policy Studies (44.05)
Public Works (44.06)

PANELIST: Dr. Valery Earle
Professor of Political Science
Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Few courses were coded in the above-listed subsections since these curricula tend to be graduate-level programs.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Public Affairs (44)

CIP SUBSECTION: Social Work (44.07)

PANELIST: Dr. C. Joseph Nuesse
Provost Emeritus of Sociology
Catholic University of America

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

- Dr. Nuesse noted that **Medical Social Work** (44.0702) should not be considered as a separate category from **Social Work, General** (44.0701). He believed that the number and variety of courses in the CSPEC under Social Work constitute "premature professionalization."

THE SOCIAL SCIENCES (45)

The Social Sciences section is unusual because at least 10 of its 12 subsections represent major curriculum programs at the postsecondary level. The subsections comprising Social Sciences comprise the following:

Social Sciences, General	(45.0101)
Anthropology	(45.0201)
Archeology	(45.0301)
Criminology	(45.0401)
Demography	(45.0501)
Economics	(45.0601)
Geography	(45.0701)
History	(45.0801)
International Relations	(45.0901)
Political Science and Government	(45.1001)
Sociology	(45.1101)
Urban Studies	(45.1201)

In three specifics cases, History, International Relations and Political Science, the total unique courses found in the sample catalogs exceeded the 100 allotted spaces under each program. As a result, ASI coders found it necessary to list unique courses under more general titles and descriptors. For example, African History was designated as a unique course with alternate titles including the history of different African regions and countries.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Social Sciences, General (45.01)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- This subsection offers a general Social Science curriculum and draws courses from other curriculum programs, such as mathematics. In cases of similarly-titled courses, the section in which the course should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding decision.

Similar Courses in Two or More CIP Sections

None.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Anthropology (45.0201)

PANELIST: NONE

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found in both Anthropology (45.02) and Area and Ethnic Studies (05). In general, Ethnic Studies focus on the history, society, politics, culture and economics of a specific race. Anthropology places greater emphasis on the culture and social characteristics of a people. The section in which these courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding selection.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Criminology (45.04)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- Coders have experienced confusion between the CIP section on **Protective Services** (43) and that on **Criminology** (45.04). The latter focuses on the social aspects of crime and rehabilitation of offenders. **Protective Services** includes coursework providing instruction on the methods of combating and rehabilitating criminals.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Economics (45.06)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Similarly-titled courses are found in both Economics (45.06) and Business (06). The section in which these courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding selection.

Similar Courses in Two or More CIP Sections

None.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: History (45.08)

PANELIST: Dr. Dorothy Brown
Department of History
Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Courses dealing with Women's History are coded under Women's Studies (30.07).

- CIP assigns one code number (45.08) for the curriculum program in History, thereby allowing only a total of 100 slots for courses with unique 8-digit codes. Given the large number of postsecondary courses in the History curriculum, Dr. Brown merged courses with similar themes (rather than similar course content) under the unique 8-digit codes to stay within the CSPEC size restriction. To assist ASI coders, she developed major categories for an initial grouping of courses, which served as a basis for selecting subgroups for 8-digit codes based on general theme. These categories are given below.

  (1) United States History
  (2) Latin American History
  (3) African History
  (4) Middle Eastern History
  (5) East Asian History
  (6) Ancient History
  (7) Medieval History
  (8) European History
  (9) General History/Historiography

  An example of the theme approach to coding is "American Social History" (45.080110). The alternate titles under this 8-digit code include "Social History of American Science" and "American Ethnic History."

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found in both History (45.08) and Area and Ethnic Studies (05). The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: International Relations (45.09)

PANELIST: Dr. Valery Earle
Professor of Political Science
Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- CIP assigns only one code number (45.09) for the curriculum program in International Relations, thereby allowing a total of 100 slots for courses with unique 8-digit codes. Given the large number of postsecondary courses in the International Relations curriculum, the 8-digit code in this area represents courses liberally merged together by theme, rather than by similar course content.

- Coders have experienced difficulty in distinguishing between International Relations (45.09) and courses dealing with comparative politics under Political Science and Government (45.10). International Relations stresses interaction among nations; courses in comparative politics focus on comparing the political systems of different countries and should be coded under the CIP section on Political Science and Government.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Political Science and Government (45.10)

PANELIST: Dr. Valery Earle
Professor of Political Science
Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

- CIP assigns only one code number (45.10) for the curriculum program in Political Science and Government, thereby allowing a total of 100 slots for courses with unique 8-digit codes. Given the large number of post-secondary courses in Political Science, the 8-digit code in this area represents courses liberally merged together by theme, rather than by similar course content.

- Unless a title indicates the course deals with a specific subject matter, independent study and seminar classes are coded under "Independent Study in Political Science" (45.100136). For example, the code for a course entitled "Seminar in Political Science" is 45.100136, while "Seminar in Political Behavior" is coded under "Political Behavior" (45.100151).

- Coders should note that, although a number of Political Science Departments offer courses in "Criminology", the CSPEC does such courses under Criminology (45.04) rather than Political Science and Government (45.10).

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Mechanics and Repairers (47)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found in Mechanics and Repairers (47), Engineering (14), and Engineering Technology (15), although the level of technical difficulty and emphasis may differ. The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding selection.

CIP SECTION: Precision Production (48)

CIP SUBSECTION: Graphic and Printing Communications (48.02)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- The distinction drawn between **Graphic Design** (50.0402) and **Graphic and Printing Communications** (48.02) is as follows: Courses focusing on the artistic aspects of Graphic Design are listed under **Graphic Design** (50.0402); courses teaching the technical aspects of graphics (for career preparation) are coded under **Graphic and Printing Communications** (48.02). For example, "Phototypesetting/Composing" is coded under 48.0205, whereas "Fundamentals of Lettering" is placed under 50.0402.

- Similarly-titled courses are found under the Industrial Arts subsection, **Graphic Arts** (21.0106), **Graphic and Printing Communications** (48.02), **Graphic Arts Technology** (50.08), and **Graphic Design** (50.0402). The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding selection.

- Similarly-titled courses are found under **Commercial Photography** (48.0204), **Photographic Laboratory and Darkroom** (48.0207), **Photography** (50.0605), and **Photographic Technology** (10.0103). As a general rule of thumb, the section on **Photography** emphasizes artistic endeavors; **Photographic Laboratory and Darkroom** and **Photographic Technology** focus on technical applications; and **Commercial Photography** on commercial uses. To assist coders, however, the section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to ascertain which department or degree program is offering the course prior to making a coding decision.

Similar Courses in Two or More CIP Sections

None.

CIP SECTION: Visual and Performing Arts (50)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

- Similar introductory classes are found under **Fine Arts, General** (50.0701), **Visual and Performing Arts, General** (50.01) and **Art History and Appreciation** (50.0703). To avoid confusion, broad topic classes describing the context of art, such as "Understanding of Art", are placed under **Fine Arts, General** (50.0701). Classes describing art during a specific time period, such as "Byzantine Art", are coded in **Art History and Appreciation** (50.0703).

- Design courses appear in several areas throughout the CIP, including Section 50.04 under the Visual and Performing Arts. In coding this subject matter, coders should refer to the school catalog to review the course descriptor and ascertain which department or degree program is offering the course prior to making a coding selection.

- Classes providing instrumental instruction (normally termed "Applied Music") are coded under **Music Performance** (50.0903).

- **Sculpture** (50.0709) and **Ceramics** (50.0202) are overlapping areas and some classes involve instruction in both sculpture and ceramics. In these instances, the courses were coded under **Sculpture**.

- **Fine Arts, Other** (50.0799), **Graphic Arts Technology** (50.08), and **Design Graphics** (50.0402) overlap in the subject area of printing. Courses coded under Design Graphics (50.0402) cover basic lettering and graphic design. Those placed under **Fine Arts, Other** (50.0799) are printmaking as an artistic endeavor. Courses under in Graphic Arts Technology (50.0801) provide instruction in commercial printing techniques, such as one would find in a publication firm.

Similar Courses in Two or More CIP Sections

- Similarly-titled courses are found in both **Fine Arts** (50.07) and **Commercial Art** (48.0203). In general, the distinction lies in the fact that the former emphasizes the artistic aspects of art, while the latter focuses on the commercial aspects. The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to review the course descriptor and ascertain which department or degree program offers the course prior to making a coding selection.

4.0 TESTING THE CSPEC

The primary reason for developing the CSPEC is to facilitate statistical research and analyses on course-taking behavior at the postsecondary level. An important measurement of the adequacy of the CSPEC in this regard is the validity of the codes assigned to college courses by individual coders using the CSPEC. To test the classification in this area, ASI invited five individuals (to be referred to as coders) to test the CSPEC using actual college transcripts. Two of these coders were the ASI staff who originally coded the classification system; the remaining three were local college graduates from the George Washington University (GWU). The coders were provided with the materials and instruction necessary to use the CSPEC. (ASI originally planned to obtain 100 transcripts for 10 coders to test the coding system, but due to time and budgetary constraints, the number of transcripts coded was reduced to 40 and the number of coders to five.) Each coder was asked to assign codes for courses on the same set of transcripts. The transcripts listed over 650 classes from 11 different schools.

Once the coding test was completed, the results were analyzed for general results. Sample size, both in terms of numbers of coders and numbers of transcripts, was insufficient to allow indepth statistical results.

4.1 Test Objective

The overall objective of the CSPEC testing was to obtain some indication that a group of coders working independently could, in fact, make a consistent appropriate coding decision a significant number of times using the CSPEC. Because, theoretically, there may be no one correct coding answer, for the purposes of the test the "correct" answer was defined as that with the highest level of agreement among the five coders. The level of agreement was reported as the number of coders assigning the same value for each course being coded.

The major expectation tested concerned the greater likelihood of obtaining the highest consensus on the first two coding digits, with coder agreement decreasing thereafter as the number of digits increased.

The logic of this concept is made evident by reviewing the structure of the eight-digit CSPEC code, as referenced in the diagram below.

Example		Breakdown of CIP Code
Letters	- 23	Section
Classics	- 23.02	Subsection
Classics	- 23.0201	Area within a Subsection
Advanced Greek & Roman Mythology	- 23.020101	Specific Course

The first two digits refer to the broad instructional CIP area. In the above example, the two-digit section entitled "Letters" represents "a summary of groups of instructional programs that describes sound, literature, syntax, phonology, morphology, semantics, sentences, prose and verse, as well as the development of skills and attitudes used in communicating and evaluating thought and feelings through oral and written language." The first four digits distinguish a subsection, such as "Classics" which is defined by CIP as " a group of instructional programs that describe the language and literature of the ancient Greco-Roman world in English translation." The first six digits, taken together, delineate a group of related classes within a subsection. In this case, the title is also "Classics." Finally, the eight-digit code designates a specific course, such as "Advanced Greek and Roman Mythology."

To test these expectations, ASI used SPSS (Statistical Package for the Social Sciences) to compare the frequency of agreement among the coders at the various increasing digit intervals. SPSS was chosen because it provides the capability of easily comparing different sections of a complex data set.

As a first step, ASI developed a method of comparing coder responses against each other. This method was based on designating two sets of coder responses as master sets. All other coder responses were then compared to these sets to obtain a percentage of agreement and disagreement.

The two master sets selected were those of ASI coders. Because of their familiarity with the CIP and CSPEC, it was assumed their chance of miscoding courses would be substantially less than that of the GWU coders.

The use of two master sets for comparison purposes was deemed necessary to avoid a problem inherent in selecting only one set. In a situation when all other coders would agree among themselves, but not with one designated master, their responses would be counted as errors although the level of agreement was high. The two master sets approach effectively circumvented this problem.

Since level of agreement was needed for different factors, all relevant variables were coded. The factors of interest included the coder, the school, the student, the specific course at each school, the different components of the eight-digit code, and the source used to determine the code. This information was coded and entered into the EDS computer system at the Department of Education, for analysis.

4.2 Identification of a Sample of School Transcripts

The transcript sample used in the test was selected to obtain representation from a variety of institutions. It consisted of public, private, technical, two-year and four-year schools in different geographic regions of the country. The distribution of schools was as follows:

NAME	CONTROL	LEVEL	LOCATION
Morgan State University	Public	4-year	Northeast
University of The District Columbia	Public	4-year	Northeast
The University of Michigan-Flint	Public	4-year	Midwest
Roosevelt College	Private	4-year	Midwest
State University of New York Agriculture & Technical College	Public	2-year	Northeast
Meridian Junior College	Public	2-year	Midwest
University of Alaska-Fairbanks	Public	4-year	West
N. Seattle Community College	Public	2-year	West
St. Augustine's College	Private	4-year	South
Cleveland Technical College	Public	2-year	South
Vassar College	Private	4-year	Northeast

4.3 Training and Pre-Testing

ASI organized a one-day training session for the three GWU coders prior to the actual coding test. The training covered the following areas:

- o A brief overview of the CSPEC and its purpose.
- o A description of the CIP format and how to use the CIP documentation in conjunction with CSPEC to code courses.
- o An introduction to the four primary source materials used for coding courses: the main CSPEC printout of course codes, titles and descriptions; the CSPEC Title Index, the CIP documentation; and the catalogs from the schools providing the sample transcripts.
- o A recommended step-by-step procedure to code courses (See the Appendix).

In addition to these instructions, the coders were given 10 sample courses to code as a pre-test practice run. The coding decisions and how they were made were discussed by the group to ensure their understanding of the materials and methodology.

4.4 Test Environment

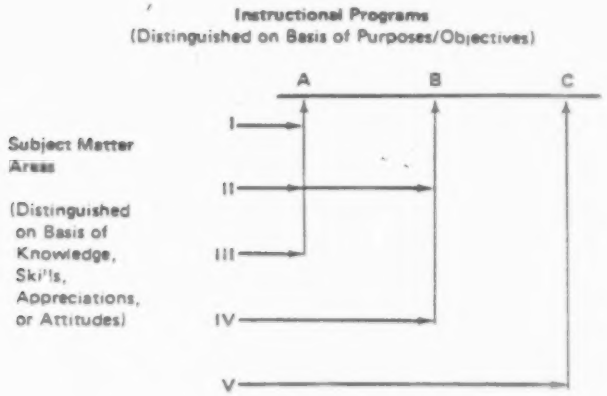
The coding test began the day following training with each coder asked to work independently in assigning codes to the same courses listed on the sample of 40 transcripts. All coders were given ready access to the resource materials needed for the coding effort and were afforded regulated, but timely, breaks to reduce the fatigue factor. ASI asked the coders to spend a maximum of ten minutes in making individual course coding decisions. Coding was completed by all participants at the end of the third day of testing.

4.5 Summary of Findings

The analysis conducted was primarily concerned with agreement among coders. As shown by Figure 1 on the following page, the potential for confusion and misclassification begins with the assignment of the first two digits of the CSPEC, and increases as each two additional digits are added. Table 1 below summarizes the major findings of this analysis and reflects the relationships shown in Figure 1.

FIGURE 1

Figure 1. Relationship Between Instructional Programs and Subject Matter Areas



The relationships between Subject Matter Areas I, II, III, and Instructional Program A illustrate a common phenomenon: instructional programs generally derive from many subject matter areas. For example, an instructional program that prepares students for advanced study in physics may draw from mathematics and chemistry, in addition to physics. The relationships between Subject Matter Area II and Instructional Programs A and B illustrate that multiple instructional programs often draw from a common subject matter area. Programs designed for such different purposes as preparing students for advanced study in physics and preparing students as entry-level machinists both draw on mathematics, though at differing levels of complexity. Finally, the relationship between Subject Matter Area V and Instructional Program C shows that many instructional programs have as their sole purpose the transferral of knowledge or skills embodied in a single subject matter area. Examples of this relationship are programs to help students with a communication skill such as reading or programs to acquaint an individual with recent advances in chemistry.

Source: Malitz, Gerald S., A Classification of Instructional Programs, U.S. Department of Education, National Center for Education Statistics, 1981, pg. 4.

Table 1

Agreement Among Coders
by Number of Digits in the CSPEC Code

Number of Digits Matched	Three Coders Agree	Four Coders Agree	Five Coders Agree
First 2 (CIP Section)	80%	76%	72%
First 4 (CIP Subsection)	72%	66%	62%
First 6 (CIP Area within Subsection)	69%	62%	57%
All 8 digits (Full CSPEC)	60%	52%	46%

As indicated, in over 50 percent of the cases, all five coders were able to agree on a six-digit code, which would place the course in the most appropriate grouping of related classes. Nevertheless, in selecting unique course codes (eight-digit), consensus fell just below the 50 percent mark.

These findings reflect certain factors which the test confirmed have impact on the ability of the coder to make an appropriate coding selection using the CSPEC. ASI believes that if these elements are eliminated or at least minimized, the consensus figures in Table 1 will be dramatically increased. The factors impacting on the CSPEC test are addressed in the following section.

4.6 Factors Impacting on Coding Decisions Utilizing the CSPEC

4.6.1 Lack of Coder Experience with the CSPEC

Although not entirely unexpected, the test did substantiate that coders familiar with the CSPEC (that is, the ASI coders who had developed the data base) reached a consensus among themselves more often than those unfamiliar with the system (the GWU coders). This divergence was particularly evident in coding the more difficult sections (reference Tables 2, 3 and 4). One could assume from this evidence that the longer the coder used the CSPEC, the more consistent he would become in making an appropriate coding decision and thus the more likely he would agree with other coders of like experience.

4.6.2. Troublesome CSPEC Sections

Testing the CSPEC in a controlled environment allowed ASI to pinpoint specific sections of the classification that presented problems to coders and should, therefore, receive more emphasis during coder training.

The coders as a group experienced the greatest difficulty in dealing with the Engineering and Engineering-Related Technologies Curriculum Areas (CSPEC Sections 14 and 15). All five failed to reach agreement on the eight-digit code level for these areas, and in 80 percent of the cases, they did not even agree on the first two digits. Nevertheless, the consensus achieved between the experienced ASI coders far exceeded those of the GWU coders. Table 2 presents these conclusions in tabular form.

Table 2
Engineering and Engineering Technologies:
Agreement Among Coders
by Coder Experience
and Number of Digits in the CSPEC

Number of Digits Matched	Experienced Coders (ASI) Agree	Five Coders Agree
First 2 digits	85%	20%
First 6 digits	31%	7%
All 8 digits	23%	0%

Several factors explain this lack of consensus. Engineering and Engineering Technologies are overlapping curricula and somewhat ambiguous. By way of example, a course on "Introduction to Circuits" could legitimately be placed in both sections. Moreover, the courses in these sections are complex for coders lacking an engineering background. Compounding these impediments was the fact that a current catalog from the school providing most of the engineering classes for the test was not available.

Another section which presented coding problems was "Computer and Information Sciences" (CSPEC Section 11), which was often confused by coders with the CSPEC Section 07 on "Business and Office". A common coding error during the test occurred in the placement of introductory computer courses, which could be coded in either section depending on the department offering the courses or the degree program in which the students were enrolled. Here, as in the case of Engineering, the experience of the coder in using the CSPEC was an important factor in the level of agreement. Table 3 presents the level of agreement reached among the coders for the computer curriculum.

Table 3

**Computer and Information Sciences:
Agreement Among Coders
by Coder Experience and
Number of Digits in the CSPEC Code**

Number of Digits Matched	Experienced Coders (ASI) Agree	Five Coders Agree
First 2 Digits	67%	46%
First 6 Digits	50%	27%
All 8 Digits	50%	27%

A final section which gave the inexperienced coders, in particular, some difficulty was Basic Skills (CSPEC Section 32). A prevalent mistake by coders was to place remedial English classes under the section on Letters (CSPEC Section 23) in lieu of Basic Skills. Once again, the more indepth knowledge of the ASI coders proved to be a key factor in attaining a high level of agreement in this area, as reflected in Table 4.

Table 4

**Basic Skills:
Agreement Among Coders
by Coder Experience and
Number of Digits in the CSPEC Code**

Number of Digits Matched	Experienced Coders (ASI) Agree	Five Coders Agree
First 2 Digits	96%	65%
First 6 Digits	91%	50%
All 8 Digits	77%	32%

4.6.3 Utilizing Out-of-Date College Catalogs

The test revealed that current catalogs are a prerequisite for correct coding. Course titles as listed on a transcript often do not adequately describe course content. For example, one school might have a class called "English I" which is more commonly known as "Freshman English." However, at another school, "English I" might refer to "Remedial English." In such instances, the coder would need to refer to the catalog for a specific description of the course. Several of the catalogs provided to ASI for the test were not current with their respective transcripts. As a result, a number of courses from these transcripts were not listed in their catalogs, thereby leaving much of the coding decision to guesswork.

4.6.4 Vague Course Abbreviations

Many schools abbreviate both the course title and the department offering the course on their transcripts. On a number of occasions, the test coders misinterpreted these abbreviations and miscoded courses.

4.6.5 Lack of Distinction of Courses by Type of Institution

Similarly-titled classes are offered at two- and four-year institutions. The test coders noted major differences between the content and the complexity of these courses, depending on the type of institution. The CIP (and thus the CSPEC), however, makes no distinction among its instructional programs as to the type of school offering that program or the level of difficulty. This conflict between the CIP and college catalog descriptors represented a source of confusion to the coders during the test.

4.6.6 Incorrect Usage or Underutilization of Source Material

In 74 percent of the cases coded, coders relied solely on the CSPEC alphabetic Title Index to locate the "correct" code. When the title listing was used, there was 26 percent agreement on the eight-digit code among the five coders. This contrasts sharply with the 51 percent level of agreement between the experienced ASI coders in using the Index. The chief cause of this discrepancy was the incorrect use of the Title Index by the three coders lacking experience in using the Index.

Likewise, the GWU coders did not reference the school catalogs as often as required to resolve the dilemma of coding similarly-titled courses found in one or more CIP section. (This problem, which is characteristic of postsecondary curricula, has already been alluded to in Section 3.0.) Instead, they often opted simply to choose the first of the titles they found in the Title Index and go no further in their search.

In like manner, the GWU coders had particular difficulty in using the CIP as a resource document. As previously indicated in Section 3.0, the CIP descriptors of its various sections tend to be non-specific. This non-specificity does not facilitate the coding of specific courses. This lack of understanding of the CIP sections discouraged the coders from utilizing the document in their coding efforts.

4.6.7 Overuse of Certain CSPEC Sections

One tendency evidenced among the three GWU coders was that when a coder became familiar with a specific CSPEC section after spending some time using it in search of a course code, he would likely fall back frequently on this section to code questionable courses. More often than not, these courses would be miscoded.

Once again, a root cause of this inclination was the lack of adequate knowledge of the CIP and CSPEC.

5.0 SUMMARY AND RECOMMENDATIONS

The CSPEC data base of over 10,000 uniquely coded postsecondary courses, if used correctly, is a potentially important survey tool for the Center of Education Statistics. The CSPEC is an expansion of the Classification of Instructional Programs (CIP) written by the Center for Education Statistics in 1981. The CSPEC is based on the structure of the CIP, dividing 50 major curriculum programs (with two-digit code numbers) into more specific areas of instruction (up to six digits). The CSPEC has taken the CIP one step further, allowing for the assignment of a unique code (eight digits) for each course under an area of instruction. The alternate titles provided by the CSPEC represent those courses whose general content duplicate those which are already assigned an eight-digit code. All courses used for the CSPEC data base were taken from a sample of 60 postsecondary educational institutions.

In order to determine the reliability and ease of use of the CSPEC for survey purposes, ASI conducted a small coding experiment. Five individuals (two who were familiar with the CSPEC and three who were not) were asked to assign codes from the CSPEC to over 650 courses from 40 college transcripts. Test coders were provided with a copy of the CIP, a printout of the CSPEC, college catalogs from each school in the transcript sample, and an alphabetic Title Index listing of all CSPEC courses and their respective codes.

The results of the test indicated that the likelihood of obtaining a consensus on any course code decreased with each CSPEC interval of two digits. In other words, coders agreed on the two-digit curriculum program area assigned each code (72 percent agreement) more often than they agreed on the entire unique course code (46 percent agreement). More importantly, the test brought to the surface certain factors adversely affecting consensus results. (These factors have been outlined in more detail in Section 4.5.) Elimination or minimization of these factors would, therefore, enhance the reliability of coding decisions.

The use of the CSPEC by coders and analysts should be approached carefully. The potential usefulness of the information provided by the CSPEC for research is evident. However, the practical limitations of the CSPEC, beyond its shear volume, should be recognized in working with the classification. Among these limitations are the following:

- The CSPEC does not reflect the level of course work

nor the type of school (particularly two-year versus four-year) offering the course work.

- Postsecondary curricula are not generally divided in accordance with the CIP, which forms the basis of the CSPEC.

- Different instructional programs frequently offer similarly-titled courses. Hence, accurate coding using the CSPEC depends heavily on the proper use of resource documentation, especially the school catalog.

As we learned from our coding test, there are steps which can be carried out to enable coders to take full advantage of the CSPEC. The following presents ASI's suggestions in this regard:

1. Provide Coders with Legible Transcripts with Clear Descriptions of Course and Department Abbreviations

Four of the schools selected for test sample provided illegible transcripts which could not be deciphered by the coders and thus were removed from the test. Good copy is, therefore, an obvious prerequisite for enhancing the coding effort.

Moreover, when a coder knows what academic department offers the course he is coding, he has a better chance of coding the course correctly within the CSPEC. Since many schools use internal abbreviations for their departments (such as OPE for Radiographic Biology) on their transcripts, it is recommended that the schools be asked to send a list of abbreviations and their meanings, along with the transcripts they are providing.

2. Provide Coders with Current Catalogs

In just over 25 percent of the cases coded during the test of the CSPEC, coders had to use sources other than the Title Index. The school catalog was a necessary reference in dealing with vague titles or with courses which could be coded in two or more CSPEC sections. Without the catalog, the coding decision would be left to guesswork. Further, since college curricula are frequently changing, and courses are dropped or added from a school catalog, coders must be provided with catalogs which match the years covered by the transcripts.

3. Conduct Extensive Coder Training

The analysis of the test results confirmed that the more knowledgeable and experienced the coders were in using the CSPEC, the higher the level of consensus in coding courses. In short, familiarity developed both speed and consistency in making appropriate coding decisions.

Although experience is gained through actual usage, familiarity and knowledge of the CSPEC can be developed and fine-tuned in a well-prepared and extensive training session. The one day provided for the ASI test coders proved too short to meet this goal for the three inexperienced

coders. In addition to increasing the length of time devoted to training, ASI would recommend several other lines of action:

- Coders should be given the CIP for review in advance of the training.
- College-educated individuals with expertise in a variety of subject areas as coder are probably the best candidates for coding courses using the CSPEC.
- In addition to the CIP, the CSPEC main printout, the CSPEC Title Index, and the school catalogs, coders should be provided with the summary of the CSPEC Panel comments as listed in Section 3.0 of this report, to become aware of ASI's approach to and interpretation of the CIP as a basis for CSPEC.
- Strong emphasis should be placed on the use of source material, most especially the school catalog and the Title Index. It is important that the coder be able to find clues as to the proper placement of a course in the CSPEC by ascertaining which school department or degree program is offering the course.
- Practice coding on sample data should be both varied and extensive, with both group and individual exercises. The more difficult sections, as pinpointed by ASI in Section 4.5.2, should be emphasized.

4. Provide Quality Control During Actual Coding Effort

Coding courses using the CSPEC is an individual effort. To ensure the consistency of approach and accuracy of coding decisions among many individuals, ASI would suggest an advisor knowledgeable and experienced in the CSPEC be available to the coders at all times to answer questions. Moreover, a periodic quality control check of a random sample of coded classes by such an advisor would also prove beneficial.

As a final note, this technical document has been provided to the Center for Education Statistics as a record of the project's objectives, development and final deliverables. It is also hoped that it may serve as an informational guide to those who will be the end users of the CSPEC in the future.

APPENDIX

Recommended Procedures to Code a Course Using CSPEC

1. Note if the transcript indicates the department in which the course is offered. This will facilitate your selecting the correct section of the CSPEC to place the course. If the department is not listed on the transcript, refer back to the school catalog to trackdown this information.

2. Look down the alphabetic CSPEC Title Index for a course of the same title which is also in the area of study indicated by the department shown on the transcript or in the catalog. Then write that code next to the class. Hopefully, most of your coding will end at this step. Note that for duplicate titles in the listing (that reflect the fact that similarly-titled courses are found in different curricula), the program area offering the course will be part of the title.

3. If the Title Index does not have the title you are looking for, refer to the catalog from the school whose transcript you are coding and read the description provided for the course concerned. Then look in the main CSPEC printout (with descriptors and alternate titles) for the CIP section which coincides with the department or degree program offering the course (see Step 1). Look down the eight-digit listing of courses under that section to find one which closely matches the description of the course you are coding. If you find the match, assign that number to the class concerned. Note that many CIP curriculum areas have four- or six-digit "Other" categories for courses not fitting in to any specific grouping of similar classes. Be sure to check the "Other" category if the no other CIP section fits the department offering the course.

4. If a match is not found in Step 3, the course should be assigned an "Miscellaneous" code. Every six-digit grouping of similar courses has an eight-digit code for miscellaneous courses that are not covered by any of the other eight-digit course codes under that category. The miscellaneous category was established simply because the CSPEC was based on a small sample of all postsecondary institutions and, therefore, does not encompass all possible postsecondary courses.